UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1999-0164

July 28, 1999

Karen Kokenbach
Department of the Army
Portland District. Corps of Engineers
P.O. Box 2946
Portland, OR 97208-2946

Re: Biological Opinion for the Pittsburg Junction Slide Repair
ID No. 99-49

Dear Mr. Patron:

The National Marine Fisheries Service (NMFS) has enclosed the Biological Opinion (BO) that addresses your proposed project to repair the slide at Pittsburg Junction along the Nehalem Highway in Columbia County, Oregon. This project is described in your Biological Assessment (BA) submitted with your request for consultation. The Army Corps of Engineers is the lead agency and ODOT is the designer and builder of the project.

This opinion considers the potential effects of the project on Oregon coast coho salmon (*Oncorhynchus kisutch)* which occur in the proposed project area. Oregon coast coho salmon were listed as threatened under the Endangered Species Act on August 10, 1998 (63 FR 24998), and critical habitat was proposed on May 10, 1999 (64 FR 24998). This opinion constitutes formal consultation for the Oregon coast coho salmon.

If you have any questions regarding this letter, please contact Nancy Munn of my staff at (503) 231-6269.

Sincerely,

William Stelle, Jr.
Regional Administrator

cc: Pieter Dykman - ODOT
Rose Owens - ODOT
Margie Willis - ODOT
Randy Reeve - ODFW

Endangered Species Act - Section 7 Consultation

Biological Opinion

Pittsburg Slide Repair
Nehalem Highway (HWY 47), MP 57.0
Columbia County

Agency: Army Corps of Engineers

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: July 28, 1999

Refer to: OSB1999-0164

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I. BACKGROUND

On July 12, 1999, the National Marine Fisheries Service (NMFS) received a Biological Assessment (BA) and request from Portland District Army Corps of Engineers (ACOE) for Endangered Species Act (ESA) section 7 consultation for a slide repair project at Pittsburg Junction along the Nehalem Highway (Hwy 47) within the Nehalem River watershed in northwestern Oregon. The Oregon Department of Transportation (ODOT) has designed and will build this project with State funds. The project is federalized through the ACOE permit required for the project. Therefore, ACOE is the lead agency in the consultation, although it will be ODOT's responsibility to implement any terms and conditions documented here. The ACOE/ODOT has determined that the Oregon coastal coho salmon (*Oncorhynchus kisutch*) (OC coho) listed under the ESA may occur within the project area. This Biological Opinion (BO) is based on the information presented in the BA and the result of the consultation process.

The ACOE/ODOT is proposing to repair a landslide that has occurred along the Nehalem Highway. At this location, the highway borders an outside bend of the Nehalem River. The slide developed in January, 1999, after a series of storms raised the river level. The west half of the highway has cracked and slumped for a length of about 82 feet, and the road is restricted to one lane of traffic. Another slide has occurred about 100 feet downstream of the main slide area. This will be fixed as part of the current action. These areas have been long term scour/road maintenance problems.

The effects determination was made using the methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The ACOE determined that the proposed actions were likely to adversely affect the indicated species.

This BO reflects the results of the consultation process. The consultation process has involved correspondence and communications to obtain additional information and clarify the BA. As appropriate, modifications to the proposal to reduce impacts to the OC coho salmon were discussed and incorporated into the proposal. Designs were modified to save existing trees and incorporate fish habitat-generating features into the rock buttress and hardpoints. Precautions will be taken to minimize damage to all trees in the project area, but particularly the large Douglas fir at the top of the bank. Smaller rock will be packed around the exposed tree roots. Corrugated metal will be used to protect the trunks during construction. Native trees and shrubs will be planted along the bank that will be protected by the hardpoints. All in-water work will be conducted during the in-water work period (July 15 to August 31).

The objective of this biological opinion is to determine whether the action to repair the slide at Pittsburg Junction is likely to jeopardize the continued existence of the OC coho salmon or destroy or adversely modify critical habitat.

II. PROPOSED ACTION

The proposed action is to repair the landslide along Hwy 47. The project consists of two parts. The first part will entail stabilizing the slide to permit repair of the road. The second part will entail taking pro-active measures along the eroded bank downstream of the slide to prevent this area from failing in the future. Design drawings of the proposed rock buttress and hardpoints are attached.

A. Slide

The slide will be stabilized by constructing a rock buttress to stop the bank erosion and provide support to the over-steepened part of the slope. The rock buttress will cover an area of roughly 5380 square feet and require an estimated 39,000 cubic feet of rock. Because the channel bottom in the slide area is bedrock, the buttress can be set directly on the bedrock without any excavation to key it in at the slope toe. Large boulders (35 to 53 cubic feet) will be used at the toe of the slope to prevent failure of the toe in the future. Metric Class 1000 rock will be used higher up on the slope. Near the top of the bank, the buttress will cover the base of some fir trees by as much as 3 feet. The leading edge of the rock buttress will be angled at 15 to 25 degrees to make a smooth transition from the existing vegetated bank to the buttress. A portion of this leading edge will extend upstream beyond the slide area into an area with shrubs and trees. Rocks will be placed to minimize damage to shrubs and trees.

The buttress will include several features to improve fish habitat and facilitate establishment of native vegetation on the buttress. Large woody debris will be installed on the downstream end of the buttress to provide refuge from high flows and cover for coho salmon and other fish species. Coniferous branches and treetops will be randomly inserted along the face of the buttress to collect debris and sediment during high flows to provide a suitable medium for plant growth. The size, orientation, and placement of rock will be varied to ensure the face of the buttress and edge along the toe are irregular or rough. The irregular edge will create small slack water areas providing refuge for fish during high flows. The irregular face will help collect and retain debris and sediment.

Construction of the rock buttress will be a tedious process because of the configuration of the site and the desire to limit impacts to existing vegetation and the river. A crane will be used to lower a large tracked excavator into the channel. The excavator will be equipped with a 360º grapple bucket to minimize impacts and reduce duration of in-water work. The excavator will individually place each rock to form the rock buttress. The rock will be delivered to the excavator using a crane. Because the channel bottom is primarily bedrock and the main flow of the river is outside the work area, the excavator can work in the channel without harming salmon or in-stream salmonid habitat. In addition, the work can be completed much more quickly than would be possible if some type of raised work platform were used to keep the excavator out of the water. As planned, the in-water work will require about one week. If necessary, the excavator operator will move existing rocks in the channel to create a stable base on which to work. At no time will the operator be allowed to remove rock from the channel.

B. Eroded bank

Beginning approximately 100 feet downstream of the slide, two rock hardpoints will be constructed to direct the flow of the river away from the eroding riverbank, thereby, minimizing future erosion and allowing the bank to stabilize naturally. The hardpoints are designed to be most effective during flood events when erosion of the bank would be most likely to occur. The two hardpoints will be constructed with slight upstream orientation and the tip of each hardpoint extending into the channel no farther than the outside edge of the rock buttress (see attached design drawings). This design will direct flow away from the bank and create slack water areas downstream of the hardpoints. It is not anticipated that the hardpoints will alter downstream hydrology. Logs buried in the hardpoints will extend into these slack water areas to increase habitat value for fish. Each log will also have the rootwad attached and suspended in the slack water to further increase habitat value.
The hardpoints are expected to allow sediment to collect along the bank and vegetation to become established in areas that had previously been eroded. This process will stabilize the bank and improve conditions for fish. The hardpoints will be placed to protect the eroded bank but not interfere with access to the culvert leading to a tributary providing good overwintering habitat for coho salmon juveniles.

Construction of the hardpoints is expected to be done in a manner similar to the rock buttress. Rock will be placed in the channel by a crane and an excavator in the channel will place the rock to create the hardpoint. Some excavation will be required to allow the hardpoints to be keyed into the bank. Approximately 2,720 cubic feet of rock and soil will be removed during the excavation. The excavated material will be disposed in an area away from streams and wetlands. The hardpoints will comprise approximately 5,300 cubic feet of large riprap.

III. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

The Oregon Coast coho salmon ESU was listed as threatened under the ESA by the NMFS on (August 10, 1998 63 FR 42587). Biological information on OC coho may be found in Weitkamp et al. (1995). Critical habitat was proposed for the OC coho on May 10, 1999 (64 FR 24998).

IV. EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of (1) defining the biological requirements and current status of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will adversely modify critical habitat it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of the OC coho salmon under the existing environmental baseline.

A. Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess to the current status of the listed species, NMFS starts with the determinations made in its decision to list OC coho for ESA protection and also considers new data available that is relevant to the determination (Weitkamp et al. 1995).

The relevant biological requirements are those necessary for OC coho to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environmental.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration, spawning and rearing. The current status of the OC coho, based upon their risk of extinction, has not significantly improved since the species was listed and, in some cases, their status may have worsened.

B. Environmental baseline

The biological requirements of OC coho are currently not being met under the environmental baseline. Their status is such that there must be a significant improvement in the environmental conditions they experience including the condition of any designated critical habitat (over those currently available under the environmental baseline). Any further degradation of these conditions would have a significant impact due to the amount of risk the listed salmon presently face under the environmental baseline.

The current range-wide status of the identified ESU may be found in Weitkamp et al. (1995). The identified actions will occur throughout some of the range of OC coho. The defined action area is the area that is directly and indirectly affected. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect affects may occur throughout the watershed where actions described in this opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities include the immediate watershed containing the project and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this opinion, the action area is defined as the main slide area and extending 500 feet downstream of the eroded bank site. Other areas of Nehalem River watershed are not expected to be directly or indirectly impacted.

The Nehalem River can be divided into two parts at a definite geologic break at approximately River Mile 40. The lower river above tidewater is generally high gradient. The middle and upper river is low gradient. The river is characterized by warm temperatures, low summer flows, low habitat complexity, and limited spawning habitat.

The Nehalem River is on Oregon Department of Environmental Quality's 303(d) list of water quality limited streams because of warm temperatures during the summer. The water temperature standard for the Nehalem River near the project is 64°F. Temperatures measured during the summer commonly exceed 70°F. All other water quality parameters are within standards. Numerous agricultural, municipal, and private domestic withdrawals of water occur along the river. These water withdrawals exacerbate the water temperature problems and the low summertime flows of the river as well as further limiting habitat availability for fish.

Many factors have contributed to the decline of coho salmon in the basin. Within the Nehalem River basin two known habitat problems exist: lack of large woody debris in the channel and a deficiency of

spawning gravel. Besides having limited spawning gravels, the low gradient of many of the tributaries to the middle and upper mainstem allow fine sediments to accumulate reducing the quality of the spawning habitat that does exist. Habitat complexity has been reduced from historical levels due to the loss of large woody debris (LWD). The loss of LWD in the watershed occurred primarily due to logging prior to the Forest Practices Act of 1972. Recovery from the loss of LWD has been slow to non-existent because conifers have been removed from riparian areas, leaving red alder (*Alnus rubra*) as the dominant tree species along the river.

The middle and upper mainstem has a limited amount of spawning gravel. Instream gravel removal, much of which is illegal and unpermitted, further reduces gravel availability for spawning. Exacerbating the problem of limited spawning gravel is an increase in sedimentation, resulting primarily from forestry activities. This increased sedimentation fills interstitial spaces of the gravel, reducing its quality for spawning. Habitat for coho salmon in the immediate area of the project is limited and of poor quality. The channel substrate in this area is composed almost entirely of bedrock. Some patches of cobbles and boulders exist in the channel, but the rock is too large for good coho salmon spawning substrate. In addition, near the project site, there are few places providing shelter from high wintertime flows. The primary shelter from high flows is a tributary accessible through a culvert at the downstream end of the project. Some LWD along the inside of the bend may provide refuge from higher flows. Coho salmon were historically the most abundant species in the Nehalem River (ODFW, unpublished report). Wild coho salmon are now extremely depressed, or extirpated, from the lower mainstem. However, the middle and upper drainage still contain wild coho salmon in most areas, although at depressed levels. Wild coho salmon have faired better in the middle and upper portions of the drainage because of better habitat in those areas.

Salmonid habitat near the project area is limited. Most coho salmon spawn in tributaries upstream of the project. The bedrock and large cobbles and boulders in the river near the project are not suitable for spawning by coho salmon. A chinook salmon spawning area exists downstream of the project. Coho salmon and steelhead use the section of the river adjacent to the project primarily as a migration corridor. Based on the best available information on the current status of Oregon coast coho range-wide; the population status, trends, and genetics; and the poor environmental baseline conditions within the action area (as described in the BA), NMFS concludes that the biological requirements of the identified ESU within the action area are not currently being met. There are survey data available for coho salmon in this region. Overall, spawning escapements have declined substantially during this century. Average spawner abundance has been relatively constant since the late 1970s, but pre-harvest abundance has declined. Improvement in habitat conditions is needed to meet the biological requirements for survival and recovery of these species. Availability of high quality habitat has been a

significant factor in the decline of OC coho (63 FR 42587). According to the analysis presented in the BA, the following habitat indicators are either at risk or not properly functioning within the action area: temperature, sediment (turbidity), fish passage, large woody debris, pool area, off-channel habitat, refugia, streambank condition, floodplain connectivity, road density/location, disturbance history, and riparian reserves. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of anadromous salmonids.

V. ANALYSIS OF EFFECT

A. Effects of Proposed Actions

The effects determination in this opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). The effects of actions are expressed in terms of the expected effect - restore, maintain, or degrade - on aquatic habitat factors in the project area.

For each individual activity covered in this opinion, the effects on aquatic habitat factors can be limited by utilizing construction methods and approaches that are intended to minimize impacts. The effects of the proposed project have been evaluated based on the application of the ODOT's *General Minimization and Avoidance Measures* which are included as terms and conditions of the incidental take statement. Of particular importance are restricting the timing of the work to the in-water work period (unless an extension is approved by NMFS and ODFW); the placement of the riprap with an irregular edge; the incorporation of structure into the riprap; implementation of erosion control and pollution control measures; limiting disturbance of the riparian area, stream bank and bed; and minimizing direct discharge of sediments or pollutants into the stream.

For each of the project activities, the NMFS expects that the effects of the project actions will tend to maintain or restore each of the habitat elements over the long-term (greater than one year). In the short term, temporary increase of sediments and turbidity and disturbance of riparian is expected. Fish may be temporarily displaced during the in-water work. There is also an increased risk of a fuel oil spill into the action area during construction.

In the long term, the increased stability of the site will reduce sedimentation. Incorporation of the LWD into the riprap will increase LWD recruitment to the stream over the long term and increase the potential for the development of rearing habitat. The potential effects from the sum total of proposed activities are expected to restore or maintain properly functioning stream conditions within the action area.

Specific effects:

1. In-water work within the Nehalem River could result in a take of OC coho. Juvenile coho rearing in the vicinity of the in-water work would most likely be displaced. There is a low probability of direct take. In-water work, generally in water less than 5 inches deep, would last from 1 to 3 weeks. The excavator may be able to work in the dry if the water level is down, or may be in a few inches of water. The excavator has a 360° grapple bucket that minimizes the amount of disturbance to the channel. These factors minimize the potential for both direct and indirect take.
2. Existing trees in the work area will be saved by the individual placement of rock around the trees.
3. Extensive clearing or excavation will not be required to access the site or allow for placement of the rock. Some excavation will be required to key hardpoints into the riverbank.
4. Large woody debris will be incorporated into the riprap design to enhance fish habitat. Rock placed to create the buttress and hardpoints will essentially mimic boulders likely to have been naturally strewn along this section of the river.
5. Short term increases in turbidity and sedimentation resulting from construction will be offset by reduced erosion of soil in the slide area and downstream of the eroded bank. The amount and duration of any increase in turbidity will be limited because of the extent of bedrock in the area, the proposed construction methods, and the implementation of best management practices to control sediment. Any increase in turbidity because of construction would be offset by the reduced erosion and input of sediment from the project area if nothing were done.

B. Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat has not been designated for the OC coho; however, it is likely to include the stream, bottom and water, and adjacent riparian zone within 300 feet of ordinary high water within the defined geographic extent. For each of the proposed activities, NMFS expects that the effects will tend to maintain or restore properly functioning conditions in the watershed under current baseline conditions over the long term. The existing channel edge provides poor habitat for coho salmon juveniles because of the lack of cover and high flows. Also, large conifers currently along the road would likely fall into the channel in the near future because of continued erosion and sliding of the bank. The addition of LWD to the bank would benefit critical habitat. In addition, all trees within the project area will be saved unless they pose a safety hazard or prevent access to the site. Any trees that are cut will be left on-site for habitat improvement activities.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the general action area is the watersheds containing the project. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes.

A wide variety of actions occur within the watershed defined within the BO. NMFS is not aware of any significant change in such non-Federal activities that are reasonably certain to occur. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

VI. CONCLUSION

NMFS has determined based on the available information, that the proposed action is expected to restore or maintain properly functioning stream conditions within the action area. Consequently, the proposed action covered in this opinion is not likely to jeopardize the continued existence of Oregon coast coho salmon. NMFS used the best available scientific and commercial data to apply its jeopardy analysis, when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NMFS applied its evaluation methodology (NMFS 1996) to the proposed action and found that it would cause minor, short-term adverse degradation of anadromous salmonid habitat due to sediment impacts and in-water construction. Direct mortality from this project may occur during the in-water work. These effects will be balanced in the long-term through the habitat enhancement activities.

VII. REINITIATION OF CONSULTATION

Consultation must be reinitiated if: the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16). To re-initiate consultation, the ACOE/ODOT must contact the Habitat Conservation Division (Oregon Branch Office) of NMFS.

VIII. REFERENCES

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this opinion.

DEQ 1996. 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1996. (www.deq.state.or.us/wq/303dlist/303dpage.htm).

DEQ 1998. Draft 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1998. (www.deq.state.or.us/wq/303dlist/303dpage.htm).

DSL 1996. Essential Indigenous Salmonid Habitat, Designated Areas, (OAR 141-102-030). Oregon Division of State Lands. Portland, Or. 1996.

NMFS (National Marine Fisheries Service) 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. Habitat Conservation Program, Portland, Oregon.

ODFW 1996. Database -- Salmonid Distribution and Habitat Utilization, Arc/Info GIS coverages. Portland, Or. 1996. (rainbow.dfw.state.or.us/ftp/).

Weitkamp, L.A., T.C. Wainwright, G.J. Brant, G.B. Miller, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status Review of Coho Salmon from Washington, Oregon , and California. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-NWFWC-24, 258 p.

IX. INCIDENTAL TAKE STATEMENT

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not

intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that the action covered by this Biological Opinion has more than a negligible likelihood of resulting in incidental take of Oregon coast coho salmon because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during in-water work (lethal and non-lethal). Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on coho habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this Biological Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information in the biological report, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Biological Opinion. The extent of the take is limited to the project area and extending downstream as far as 500 feet downstream of the eroded bank area.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimizing take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species.

1. To minimize the amount and extent of incidental take from construction activities within the stream channel, measures shall be taken to limit the duration of in-water work, and to time such work to occur when listed fish are absent.
2. To minimize the amount and extent of incidental take from construction activities in or near stream channels, effective erosion and pollution control and revegetation measures shall be developed and implemented to minimize the movement of soils and sediment both into and within the stream channel, and to stabilize bare soil over both the short term and long term.
3. To minimize the amount and extent of take from loss of habitat complexity and to minimize impacts to critical habitat, measures shall be taken to minimize impacts to riparian habitat, or where impacts are unavoidable, to replace lost riparian habitat function. Measures shall be

taken to minimize the use of riprap, and to introduce habitat complexity back into the project area.

4. To ensure effectiveness of implementation of the reasonable and prudent measures, all plantings and mitigation sites shall be monitored and meet criteria as described below in the terms and conditions. Also, erosion control measures shall be monitored and evaluated both during and following construction.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the ACOE/ODOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. In-water work:

   a. Passage shall be provided for both adult and juvenile forms of all salmonid species throughout the construction period. ODOT designs will ensure passage of fishes as per ORS 498.268 and ORS 509.605.

   b. All work within the active channel of all anadromous fish-bearing systems, or in systems which could potentially contribute sediment or toxicants to downstream fish-bearing systems, will be completed within ODFW's in-water work period. Any extensions of the in-water work period will first be approved by and coordinated with ODFW and NMFS.

   c. Where riprap is necessary, only clean, non-erodible, upland angular rock of sufficient size for long-term bank armoring will be employed.

   d. Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material shall be placed to maintain normal waterway configuration. Waterway bank slopes will be left no steeper than 1:1.35.

   e. No pollutant of any kind (petroleum products, fresh concrete, silt, etc.) shall come in contact with the active flowing stream.

   f. Place waste materials and spoils above the bank line and away from any wetlands.

2. Erosion and Pollution Control

An Erosion Control Plan (ECP) will be prepared by the contractor, in cooperation with the ODOT Engineer. It will be reviewed by the ODOT Engineer and implemented by the contractor. The ECP will outline how and to what specifications various erosion control devices will be installed to meet water quality standards, and will provide a specific inspection protocol and time response. Erosion control measures will be sufficient to ensure compliance with all applicable water quality standards.

a. Erosion Control measures shall include (but not be limited to) the following:

   i. The contractor will have the following on hand: 50 weed-free straw bales, 150 feet of unsupported silt fence, and 25 biobags.
   ii. Temporary plastic sheeting for immediate protection of open areas (where seeding/ mulching are not appropriate), in accordance with ODOT's Standard Specifications.
   iii. Erosion control blankets or heavy duty matting (e.g., jute) may be used on steep unstable slopes.
   iv. Sills or barriers may be placed in drainage ditches along cut slopes and on steep grades to trap sediment and prevent scouring of the ditches. The barriers will be constructed from rock and straw bales.
   v. Biobags, weed-free straw bales and loose straw may be used for temporary erosion control. Temporary erosion and sediment controls will be used on all exposed slopes during any hiatus in work on exposed slopes.

b. Effective erosion control measures shall be in-place at all times during the contract. Construction within the 5-year floodplain will not begin until all temporary erosion controls (e.g., straw bales, silt fences) are in-place, downslope of project activities within the riparian area. Erosion control structures will be maintained throughout the life of the contract.

c. All temporarily-exposed areas will be seeded and mulched. Erosion control seeding and mulching, and placement of erosion control blankets and mats (if applicable) will be completed on all areas of bare soil within 7 days of exposure within 150 feet of waterways, wetlands or other sensitive areas, and in all areas during the wet season (after October 1). All other areas will be stabilized within 14 days of exposure. Efforts will be made to cover exposed areas as soon as possible after exposure.

d. All erosion control devices will be inspected during construction to ensure that they are working adequately. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, monthly on inactive sites. Work crews will be mobilized to make immediate repairs to the erosion controls, or to install erosion

controls during working and off-hours. Should a control measure not function effectively, the control measure will be immediately repaired or replaced. Additional controls will be installed as necessary.

e. If soil erosion and sediment resulting from construction activities is not effectively controlled, the Engineer will limit the amount of disturbed area to that which can be adequately controlled.

f. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 cm. Catch basins shall be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.

g. Where feasible, sediment-laden water created by construction activity shall be filtered before it leaves the right-of-way or enters an aquatic resource area. Silt fences or other detention methods will be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.

h. A supply of erosion control materials (e.g., straw bales and clean straw mulch) will be kept on hand to cover small sites that may become bare and to respond to sediment emergencies.

i. All equipment that is used for instream work will be cleaned prior to entering the two-year floodplain. External oil and grease will be removed, along with dirt and mud. Untreated wash and rinse water will not be discharged into streams and rivers without adequate treatment.

j. On cut slopes steeper than 1:2 a tackified seed mulch will be used so that the seed does not wash away before germination and rooting occurs. In steep locations, a hydro-mulch will be applied at 1.5 times the rate.

k. Material removed during excavation shall only be placed in locations where it cannot enter sensitive aquatic resources. Conservation of topsoil (removal, storage and reuse) will be employed.

l. Measures will be taken to prevent construction debris from falling into any aquatic resource. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.

m. ODOT actions will follow all provisions of the Clean Water Act (40 CFR Subchapter D) and DEQ's provisions for maintenance of water quality standards not to be

exceeded within the Nehalem Basin (OAR Chapter 340, Division 41). Toxic substances shall not be introduced above natural background levels in waters of the state in amounts which may be harmful to aquatic life. Any turbidity caused by this project shall not exceed DEQ water quality standards.

n. The Contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the ODOT Engineer to ensure compliance with this PCP. The PCP shall include the following:

i. a site plan and narrative describing the methods of erosion/sediment control to be used to prevent erosion and sediment for contractor's operations related to disposal sites, borrow pits operations, haul roads, equipment storage sites, fueling operations and staging areas.
ii. methods for confining and removing and disposing of excess concrete, cement and other mortors. Also identify measures for washout facilities.
iii. provide a spill containment and control plan that includes: notification procedures; specific clean up and disposal instructions for different products; quick response containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.
iv. identify measures to be used to reduce and recycle hazardous and non-hazardous waste generated from the project, including the following: the types of materials, estimated quantity, storage methods, and disposal methods.
v. the person identified in 00280 as the Erosion and Pollutant Control Manager (EPCM) shall also be responsible for the management of the contractor's PCP.

o. Areas for fuel storage and servicing of construction equipment and vehicles will be located at least 150 feet away from any water body. Once the excavator it is placed at the bottom of the slope, it can be refueled at that location. However, the contractor must write stringent protection measures in the Spill Prevention and Countermeasures Plan so that spill control supplies are available on the riverbank before the excavator is lowered.

p. Hazmat booms will be installed in all aquatic systems where:

i. Significant in-water work will occur, or where significant work occurs within the 5-year floodplain of the system, or where sediment/toxicant spills are possible.

ii. The aquatic system can support a boom setup (i.e. the creek is large enough, low-moderate gradient).

iii. A significant aquatic resource occurs downstream or within the project area.[1]

q. Hazmat booms will be maintained on-site in locations where "diapering" of vehicles to catch any toxicants (oils, greases, brake fluid) will be mandated when the vehicles have any potential to contribute toxic materials into aquatic systems.

r. No surface application of nitrogen fertilizer will be used within 50 feet of any aquatic resource.

3. Riparian Issues

a. Where appropriate, boundaries of the clearing limits will be flagged by the project inspector of ODOT. Ground will not be disturbed beyond the flagged boundary.

b. Alteration of native vegetation will be minimized. Whenever trees or shrubs must be removed during the course of the project, the above ground portion of the vegetation will be pruned or cut so that the roots are left intact. This will reduce erosion while still allowing room to work.

c. Riparian overstory vegetation removed will have a replacement rate of l.5:1. Replacement will occur within the project vicinity where possible and within the watershed at a minimum.

4. Monitoring

a. NMFS requests monitoring of the LWD incorporated into the riprap. The purpose of this monitoring is to collect information about how this experimental approach functions. Factors examined would include, at a minimum, stability of the riprap and LWD, and the deposition of sediment and other materials. The monitoring should be done one year following construction, and again at year 3 and year 5. A report documenting the conditions will be prepared and provided to NMFS (Oregon Branch) for review.

b. All significant riparian replant areas, streambank and channel restoration/enhancement actions, and off-channel mitigation sites will be monitored to insure the following:

[1]Significant aquatic resources may include estuaries, spawning areas, or rearing areas.

i. Finished grade slopes and elevations will perform the appropriate role for which they were designed.
ii. Log and rock structures are placed appropriately and adequately secured.
iii. Plantings are performed correctly and have an adequate success rate.

c. Mitigation site monitoring will ensure that mitigation commitments have an adequate success rate to replace the functions they were designed to replace. ODOT Biology staff will produce a report once following construction, and then in year three and year five.

d. Failed plantings and structures will be replaced, if replacement would potentially succeed. In cases of failed design, mitigation will generally be sought on another project, in a more appropriate location.